

Extruded Positioning Stage

The Extruded Positioning Stage is ideally suited for long stroke high acceleration closed loop servo applications.



Design Specifications

- Linear brushless iron core motor with peak force ratings to 240 pounds [1065 N]
- Speeds to 78 in/sec (2 m/sec) with standard 5 micron encoder resolution
- Strokes to 120 inches (3 m) standard, longer travels available as custom
- 5 micron linear magnetic encoder scale standard with other resolutions available as custom

Features

- Single-axis stage – Modular aluminum construction with integral brushless linear motor, linear encoder, limit switches, cable carrier, linear bearings and bellows
- Turnkey operation
- Internal linear motor cable carrier
- High stiffness linear recirculating ball bearings with low friction seals

- Use with Trapezoidal or sinusoidal 3-phase brushless control and single-axis motion controller to close the position loop (Refer to Baldor's AC Controls – FlexDrive™ Series and Mint Motion Controllers.)

The extruded positioning stage is a cost-effective solution for those applications requiring less stringent positioning requirements. It features lightweight moving parts for high acceleration of light loads. The brushless linear motor provides smooth, highly reliable non-contact operation with no backlash or component wear. Dynamic performance with low settling times is provided by the brushless motor stiffness. Its essentially square shape and integral cable carrier allows mounting multiple stages close together. These stages can also be stacked to provide multi-axis positioning.

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Mechanical Specifications

Stroke, Maximum	155 in [3.93 m]
Payload, Maximum	300 Lbs [136 kg]
Base / Table Material	Aluminum
Home Limit Switches	Non-contact Optical
Hard Stops	Spring Loaded
Cable Carrier	Flexible Composite Material
Bearing	Linear Recirculating Ball
Linear Feedback (5µm std)	Linear Magnetic Scale
Moving Mass (Less Motor)	9 Lbs. [4.09 kg]

Dynamic Characteristics

Accuracy	in/ft [µm/300 mm]	± 0.002 [50.3]
Repeatability	in [µm]	0.001 [25.4]
Straightness	in/ft [µm/300 mm]	± 0.003 [76.2]
Flatness	in/ft [µm/300 mm]	± 0.003 [76.2]

Motor Type - Iron Core Brushless

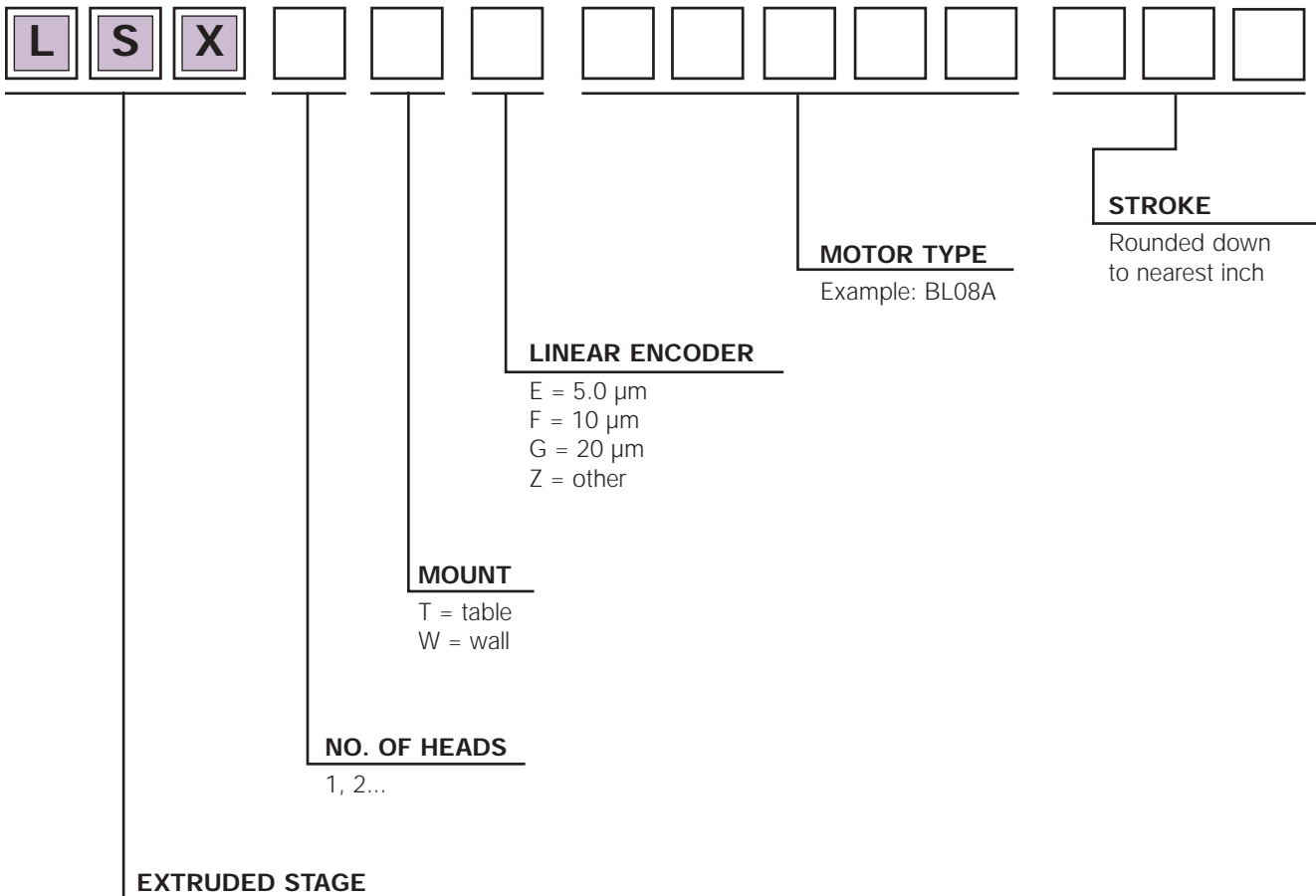
Force @ 100% duty cycle	to 80 Lbs (356 N)
Forces @ 10% duty cycle	to 240 Lbs (1065 N)
Velocity	to 78 in/sec (2 m/s)
Acceleration	to 4.5 g/s (44 m/s ²)

LSX Stage Max Encoder (ELGO) Speeds

ENCODER TYPE	MIX4 w/one shot Z			MIX5 w/Z		
RESOLUTION microns[in]	5 [.0002]	10 [.0004]	50 [.002]	5 [.0002]	10 [.0004]	50 [.002]
MAX SPEED in/sec[m/sec]	*78 [2]	*157 [4]	*787 [20]	*49 [1.25]	*98 [2.5]	*492 [12.5]

NOTE: *Maximum motor speed may be slower than the maximum encoder speed, based on bus voltage available.

Extruded Stage Catalog Identification Matrix



Extruded Stage Catalog Numbers

Motor		LMBL06A			
Cont. Force		20 Lbs [89N]			
Peak Force		60 Lbs [267N]			
Stroke		Overall Length		Stage	
Inch	Meter	Inch	Meter	Catalog Number	
6	0.1524	17	0.4318	LSX1TEBL06A006	
12	0.3048	23	0.5842	LSX1TEBL06A012	
18	0.4572	29	0.7366	LSX1TEBL06A018	
24	0.6096	36	0.9144	LSX1TEBL06A024	
30	0.762	43	1.0922	LSX1TEBL06A030	
36	0.9144	50	1.27	LSX1TEBL06A036	
42	1.0668	57.5	1.4605	LSX1TEBL06A042	
48	1.2192	64.5	1.6383	LSX1TEBL06A048	
54	1.3716	72	1.8288	LSX1TEBL06A054	
60	1.524	79	2.0066	LSX1TEBL06A060	
66	1.6764	86	2.1844	LSX1TEBL06A066	
72	1.8288	93.5	2.3749	LSX1TEBL06A072	
78	1.9812	100.5	2.5527	LSX1TEBL06A078	
84	2.1336	108	2.7432	LSX1TEBL06A084	
90	2.286	115	2.921	LSX1TEBL06A090	
96	2.4384	122	3.0988	LSX1TEBL06A096	
102	2.5908	129.5	3.2893	LSX1TEBL06A102	
108	2.7432	136.5	3.4671	LSX1TEBL06A108	
114	2.8956	144	3.6576	LSX1TEBL06A114	
120	3.048	151	3.8354	LSX1TEBL06A120	

Motor		LMBL10A			
Cont. Force		40 Lbs [178N]			
Peak Force		120 Lbs [534N]			
Stroke		Overall Length		Stage	
Inch	Meter	Inch	Meter	Catalog Number	
6	0.1524	20.5	0.5207	LSX1TEBL10A006	
12	0.3048	26.5	0.6731	LSX1TEBL10A012	
18	0.4572	32.5	0.8255	LSX1TEBL10A018	
24	0.6096	38.5	0.9779	LSX1TEBL10A024	
30	0.762	45	1.143	LSX1TEBL10A030	
36	0.9144	52	1.3208	LSX1TEBL10A036	
42	1.0668	59.5	1.5113	LSX1TEBL10A042	
48	1.2192	66.5	1.6891	LSX1TEBL10A048	
54	1.3716	74	1.8796	LSX1TEBL10A054	
60	1.524	81	2.0574	LSX1TEBL10A060	
66	1.6764	88	2.2352	LSX1TEBL10A066	
72	1.8288	95.5	2.4257	LSX1TEBL10A072	
78	1.9812	102.5	2.6035	LSX1TEBL10A078	
84	2.1336	110	2.794	LSX1TEBL10A084	
90	2.286	117	2.9718	LSX1TEBL10A090	
96	2.4384	124	3.1496	LSX1TEBL10A096	
102	2.5908	131.5	3.3401	LSX1TEBL10A102	
108	2.7432	138.5	3.5179	LSX1TEBL10A108	
114	2.8956	146	3.7084	LSX1TEBL10A114	
120	3.048	153	3.8862	LSX1TEBL10A120	

Motor		LMBL08A			
Cont. Force		30 Lbs [133N]			
Peak Force		90 Lbs [400N]			
Stroke		Overall Length		Stage	
Inch	Meter	Inch	Meter	Catalog Number	
6	0.1524	18.5	0.4699	LSX1TEBL08A006	
12	0.3048	24.5	0.6223	LSX1TEBL08A012	
18	0.4572	30.5	0.7747	LSX1TEBL08A018	
24	0.6096	36.5	0.9271	LSX1TEBL08A024	
30	0.762	43	1.0922	LSX1TEBL08A030	
36	0.9144	50	1.27	LSX1TEBL08A036	
42	1.0668	57.5	1.4605	LSX1TEBL08A042	
48	1.2192	64.5	1.6383	LSX1TEBL08A048	
54	1.3716	72	1.8288	LSX1TEBL08A054	
60	1.524	79	2.0066	LSX1TEBL08A060	
66	1.6764	86	2.1844	LSX1TEBL08A066	
72	1.8288	93.5	2.3749	LSX1TEBL08A072	
78	1.9812	100.5	2.5527	LSX1TEBL08A078	
84	2.1336	108	2.7432	LSX1TEBL08A084	
90	2.286	115	2.921	LSX1TEBL08A090	
96	2.4384	122	3.0988	LSX1TEBL08A096	
102	2.5908	129.5	3.2893	LSX1TEBL08A102	
108	2.7432	136.5	3.4671	LSX1TEBL08A108	
114	2.8956	144	3.6576	LSX1TEBL08A114	
120	3.048	151	3.8354	LSX1TEBL08A120	

Motor		LMBL12A			
Cont. Force		50 Lbs [222N]			
Peak Force		150 Lbs [667N]			
Stroke		Overall Length		Stage	
Inch	Meter	Inch	Meter	Catalog Number	
6	0.1524	22	0.5588	LSX1TEBL12A006	
12	0.3048	28	0.7112	LSX1TEBL12A012	
18	0.4572	34	0.8636	LSX1TEBL12A018	
24	0.6096	40	1.016	LSX1TEBL12A024	
30	0.762	46	1.1684	LSX1TEBL12A030	
36	0.9144	52	1.3208	LSX1TEBL12A036	
42	1.0668	59.5	1.5113	LSX1TEBL12A042	
48	1.2192	66.5	1.6891	LSX1TEBL12A048	
54	1.3716	74	1.8796	LSX1TEBL12A054	
60	1.524	81	2.0574	LSX1TEBL12A060	
66	1.6764	88	2.2352	LSX1TEBL12A066	
72	1.8288	95.5	2.4257	LSX1TEBL12A072	
78	1.9812	102.5	2.6035	LSX1TEBL12A078	
84	2.1336	110	2.794	LSX1TEBL12A084	
90	2.286	117	2.9718	LSX1TEBL12A090	
96	2.4384	124	3.1496	LSX1TEBL12A096	
102	2.5908	131.5	3.3401	LSX1TEBL12A102	
108	2.7432	138.5	3.5179	LSX1TEBL12A108	
114	2.8956	146	3.7084	LSX1TEBL12A114	
120	3.048	153	3.8862	LSX1TEBL12A120	

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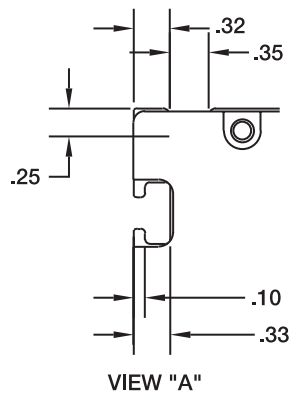
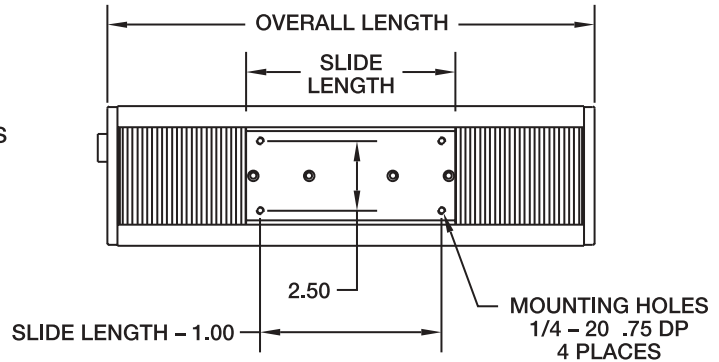
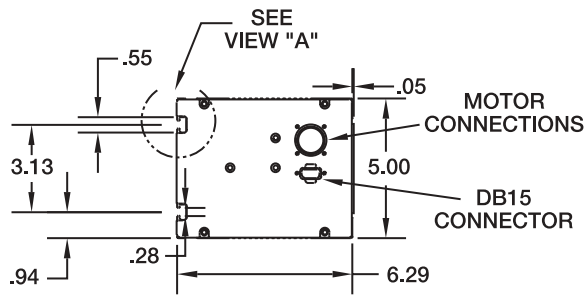
Engineering Information

Motor		LMBL14A				
Cont. Force		60 Lbs [266N]				
Peak Force		180 Lbs [799N]				
Stroke		Overall Length		Stage		
Inch	Meter	Inch	Meter	Catalog Number		
6	0.1524	24	0.6096	LSX1TEBL14A006		
12	0.3048	30	0.762	LSX1TEBL14A012		
18	0.4572	36	0.9144	LSX1TEBL14A018		
24	0.6096	42	1.0668	LSX1TEBL14A024		
30	0.762	48	1.2192	LSX1TEBL14A030		
36	0.9144	54	1.3716	LSX1TEBL14A036		
42	1.0668	61.5	1.5621	LSX1TEBL14A042		
48	1.2192	68.5	1.7399	LSX1TEBL14A048		
54	1.3716	76	1.9304	LSX1TEBL14A054		
60	1.524	83	2.1082	LSX1TEBL14A060		
66	1.6764	90	2.286	LSX1TEBL14A066		
72	1.8288	97.5	2.4765	LSX1TEBL14A072		
78	1.9812	104.5	2.6543	LSX1TEBL14A078		
84	2.1336	112	2.8448	LSX1TEBL14A084		
90	2.286	119	3.0226	LSX1TEBL14A090		
96	2.4384	126	3.2004	LSX1TEBL14A096		
102	2.5908	133.5	3.3909	LSX1TEBL14A102		
108	2.7432	140.5	3.5687	LSX1TEBL14A108		
114	2.8956	148	3.7592	LSX1TEBL14A114		
120	3.048	155	3.937	LSX1TEBL14A120		

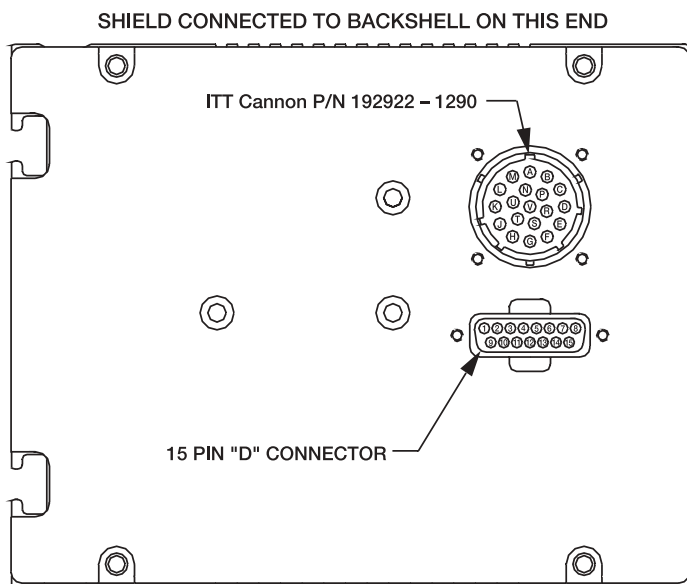
Motor		LMBL16A				
Cont. Force		70 Lbs [310N]				
Peak Force		210 Lbs [932N]				
Stroke		Overall Length		Stage		
Inch	Meter	Inch	Meter	Catalog Number		
6	0.1524	26	0.6604	LSX1TEBL16A006		
12	0.3048	32	0.8128	LSX1TEBL16A012		
18	0.4572	38	0.9652	LSX1TEBL16A018		
24	0.6096	44	1.1176	LSX1TEBL16A024		
30	0.762	50	1.27	LSX1TEBL16A030		
36	0.9144	56	1.4224	LSX1TEBL16A036		
42	1.0668	62	1.5748	LSX1TEBL16A042		
48	1.2192	68.5	1.7399	LSX1TEBL16A048		
54	1.3716	76	1.9304	LSX1TEBL16A054		
60	1.524	83	2.1082	LSX1TEBL16A060		
66	1.6764	90	2.286	LSX1TEBL16A066		
72	1.8288	97.5	2.4765	LSX1TEBL16A072		
78	1.9812	104.5	2.6543	LSX1TEBL16A078		
84	2.1336	112	2.8448	LSX1TEBL16A084		
90	2.286	119	3.0226	LSX1TEBL16A090		
96	2.4384	126	3.2004	LSX1TEBL16A096		
102	2.5908	133.5	3.3909	LSX1TEBL16A102		
108	2.7432	140.5	3.5687	LSX1TEBL16A108		
114	2.8956	148	3.7592	LSX1TEBL16A114		
120	3.048	155	3.937	LSX1TEBL16A120		

Motor		LMBL18A				
Cont. Force		80 Lbs [356N]				
Peak Force		240 Lbs [1068N]				
Stroke		Overall Length		Stage		
Inch	Meter	Inch	Meter	Catalog Number		
6	0.1524	27.5	0.6985	LSX1TEBL18A006		
12	0.3048	33.5	0.8509	LSX1TEBL18A012		
18	0.4572	39.5	1.0033	LSX1TEBL18A018		
24	0.6096	45.5	1.1557	LSX1TEBL18A024		
30	0.762	51.5	1.3081	LSX1TEBL18A030		
36	0.9144	57.5	1.4605	LSX1TEBL18A036		
42	1.0668	63.5	1.6129	LSX1TEBL18A042		
48	1.2192	70.5	1.7907	LSX1TEBL18A048		
54	1.3716	78	1.9812	LSX1TEBL18A054		
60	1.524	85	2.159	LSX1TEBL18A060		
66	1.6764	92	2.3368	LSX1TEBL18A066		
72	1.8288	99.5	2.5273	LSX1TEBL18A072		
78	1.9812	106.5	2.7051	LSX1TEBL18A078		
84	2.1336	114	2.8956	LSX1TEBL18A084		
90	2.286	121	3.0734	LSX1TEBL18A090		
96	2.4384	128	3.2512	LSX1TEBL18A096		
102	2.5908	135.5	3.4417	LSX1TEBL18A102		
108	2.7432	142.5	3.6195	LSX1TEBL18A108		
114	2.8956	150	3.81	LSX1TEBL18A114		
120	3.048	157	3.9878	LSX1TEBL18A120		

Extruded Stage Dimensions (Inches [mm])



Extruded Stage LSX Connections



PIN #	SIGNAL
1	A
2	B
3	C
4	HALL 1
5	N.C.
6	A-
7	B-
8	C-
9	HALL 3
10	HALL 2
11	+5V
12	N.C.
13	GND
14	N.C.
15	N.C.

MOTOR CABLE CONNECTIONS	
PIN #	FUNCTION
A	A
B	B
C	C
D	GROUND
E	SHIELD
LIMIT CABLE CONNECTIONS	
P	LIMIT
R	HOME
S	GROUND
T	+24
M	SHIELD

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